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The Gatehouse Heathwood Road, Higher Heath Whitchurch SY13 2HG																																																																																																																																																																																																			
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Designed by Graham Whitelaw Checked by																																																																																																																																																																																																			
XP Solutions			Source Control 2017.1.2																																																																																																																																																																																																
Summary of Results for 100 year Return Period (+40%) Half Drain Time : 82 minutes. <table><tr><th>Storm Event</th><th>Max Level (m)</th><th>Max Depth (m)</th><th>Max Infiltration (l/s)</th><th>Max Volume (m³)</th><th>Status</th></tr><tr><td>15 min Summer</td><td>9.185</td><td>0.685</td><td>8.9</td><td>48.9</td><td>O K</td></tr><tr><td>30 min Summer</td><td>9.328</td><td>0.828</td><td>8.9</td><td>60.6</td><td>O K</td></tr><tr><td>60 min Summer</td><td>9.394</td><td>0.894</td><td>8.9</td><td>66.0</td><td>O K</td></tr><tr><td>120 min Summer</td><td>9.358</td><td>0.858</td><td>8.9</td><td>63.1</td><td>O K</td></tr><tr><td>180 min Summer</td><td>9.300</td><td>0.800</td><td>8.9</td><td>58.3</td><td>O K</td></tr><tr><td>240 min Summer</td><td>9.239</td><td>0.739</td><td>8.9</td><td>53.4</td><td>O K</td></tr><tr><td>360 min Summer</td><td>9.121</td><td>0.621</td><td>8.9</td><td>43.8</td><td>O K</td></tr><tr><td>480 min Summer</td><td>9.012</td><td>0.512</td><td>8.9</td><td>34.9</td><td>O K</td></tr><tr><td>600 min Summer</td><td>8.918</td><td>0.418</td><td>8.9</td><td>27.2</td><td>O K</td></tr><tr><td>720 min Summer</td><td>8.841</td><td>0.341</td><td>8.9</td><td>20.9</td><td>O K</td></tr><tr><td>960 min Summer</td><td>8.730</td><td>0.230</td><td>8.9</td><td>11.8</td><td>O K</td></tr><tr><td>1440 min Summer</td><td>8.651</td><td>0.151</td><td>8.0</td><td>5.5</td><td>O K</td></tr><tr><td>2160 min Summer</td><td>8.612</td><td>0.112</td><td>5.9</td><td>3.0</td><td>O K</td></tr><tr><td>2880 min Summer</td><td>8.589</td><td>0.089</td><td>4.7</td><td>1.9</td><td>O K</td></tr><tr><td>4320 min Summer</td><td>8.564</td><td>0.064</td><td>3.4</td><td>1.0</td><td>O K</td></tr><tr><td>5760 min Summer</td><td>8.551</td><td>0.051</td><td>2.7</td><td>0.6</td><td>O K</td></tr><tr><td>7200 min Summer</td><td>8.546</td><td>0.046</td><td>2.2</td><td>0.5</td><td>O K</td></tr><tr><td>8640 min Summer</td><td>8.543</td><td>0.043</td><td>1.9</td><td>0.4</td><td>O K</td></tr></table> <table><tr><th>Storm Event</th><th>Rain (mm/hr)</th><th>Flooded Volume (m³)</th><th>Time-Peak (mins)</th></tr><tr><td>15 min Summer</td><td>128.253</td><td>0.0</td><td>23</td></tr><tr><td>30 min Summer</td><td>82.677</td><td>0.0</td><td>36</td></tr><tr><td>60 min Summer</td><td>50.812</td><td>0.0</td><td>62</td></tr><tr><td>120 min Summer</td><td>30.273</td><td>0.0</td><td>94</td></tr><tr><td>180 min Summer</td><td>22.125</td><td>0.0</td><td>128</td></tr><tr><td>240 min Summer</td><td>17.638</td><td>0.0</td><td>162</td></tr><tr><td>360 min Summer</td><td>12.742</td><td>0.0</td><td>228</td></tr><tr><td>480 min Summer</td><td>10.074</td><td>0.0</td><td>292</td></tr><tr><td>600 min Summer</td><td>8.388</td><td>0.0</td><td>352</td></tr><tr><td>720 min Summer</td><td>7.228</td><td>0.0</td><td>410</td></tr><tr><td>960 min Summer</td><td>5.712</td><td>0.0</td><td>520</td></tr><tr><td>1440 min Summer</td><td>4.095</td><td>0.0</td><td>740</td></tr><tr><td>2160 min Summer</td><td>2.931</td><td>0.0</td><td>1104</td></tr><tr><td>2880 min Summer</td><td>2.311</td><td>0.0</td><td>1468</td></tr><tr><td>4320 min Summer</td><td>1.651</td><td>0.0</td><td>2196</td></tr><tr><td>5760 min Summer</td><td>1.300</td><td>0.0</td><td>2872</td></tr><tr><td>7200 min Summer</td><td>1.079</td><td>0.0</td><td>3640</td></tr><tr><td>8640 min Summer</td><td>0.927</td><td>0.0</td><td>4304</td></tr></table>						Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status	15 min Summer	9.185	0.685	8.9	48.9	O K	30 min Summer	9.328	0.828	8.9	60.6	O K	60 min Summer	9.394	0.894	8.9	66.0	O K	120 min Summer	9.358	0.858	8.9	63.1	O K	180 min Summer	9.300	0.800	8.9	58.3	O K	240 min Summer	9.239	0.739	8.9	53.4	O K	360 min Summer	9.121	0.621	8.9	43.8	O K	480 min Summer	9.012	0.512	8.9	34.9	O K	600 min Summer	8.918	0.418	8.9	27.2	O K	720 min Summer	8.841	0.341	8.9	20.9	O K	960 min Summer	8.730	0.230	8.9	11.8	O K	1440 min Summer	8.651	0.151	8.0	5.5	O K	2160 min Summer	8.612	0.112	5.9	3.0	O K	2880 min Summer	8.589	0.089	4.7	1.9	O K	4320 min Summer	8.564	0.064	3.4	1.0	O K	5760 min Summer	8.551	0.051	2.7	0.6	O K	7200 min Summer	8.546	0.046	2.2	0.5	O K	8640 min Summer	8.543	0.043	1.9	0.4	O K	Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)	15 min Summer	128.253	0.0	23	30 min Summer	82.677	0.0	36	60 min Summer	50.812	0.0	62	120 min Summer	30.273	0.0	94	180 min Summer	22.125	0.0	128	240 min Summer	17.638	0.0	162	360 min Summer	12.742	0.0	228	480 min Summer	10.074	0.0	292	600 min Summer	8.388	0.0	352	720 min Summer	7.228	0.0	410	960 min Summer	5.712	0.0	520	1440 min Summer	4.095	0.0	740	2160 min Summer	2.931	0.0	1104	2880 min Summer	2.311	0.0	1468	4320 min Summer	1.651	0.0	2196	5760 min Summer	1.300	0.0	2872	7200 min Summer	1.079	0.0	3640	8640 min Summer	0.927	0.0	4304
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XP Solutions		Source Control 2017.1.2			
<u>Summary of Results for 100 year Return Period (+40%)</u>					
Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status
10080 min Summer	8.540	0.040	1.7	0.4	O K
15 min Winter	9.270	0.770	8.9	55.9	O K
30 min Winter	9.438	0.938	8.9	69.6	O K
60 min Winter	9.529	1.029	8.9	77.1	O K
120 min Winter	9.489	0.989	8.9	73.8	O K
180 min Winter	9.407	0.907	8.9	67.1	O K
240 min Winter	9.316	0.816	8.9	59.7	O K
360 min Winter	9.136	0.636	8.9	44.9	O K
480 min Winter	8.972	0.472	8.9	31.6	O K
600 min Winter	8.837	0.337	8.9	20.6	O K
720 min Winter	8.736	0.236	8.9	12.3	O K
960 min Winter	8.657	0.157	8.2	5.9	O K
1440 min Winter	8.614	0.114	6.0	3.1	O K
2160 min Winter	8.582	0.082	4.3	1.6	O K
2880 min Winter	8.565	0.065	3.4	1.0	O K
4320 min Winter	8.548	0.048	2.4	0.6	O K
5760 min Winter	8.543	0.043	1.9	0.4	O K
7200 min Winter	8.539	0.039	1.6	0.4	O K
8640 min Winter	8.536	0.036	1.4	0.3	O K
Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)		
10080 min Summer	0.815	0.0	5072		
15 min Winter	128.253	0.0	23		
30 min Winter	82.677	0.0	36		
60 min Winter	50.812	0.0	62		
120 min Winter	30.273	0.0	102		
180 min Winter	22.125	0.0	138		
240 min Winter	17.638	0.0	176		
360 min Winter	12.742	0.0	246		
480 min Winter	10.074	0.0	308		
600 min Winter	8.388	0.0	366		
720 min Winter	7.228	0.0	416		
960 min Winter	5.712	0.0	504		
1440 min Winter	4.095	0.0	742		
2160 min Winter	2.931	0.0	1100		
2880 min Winter	2.311	0.0	1444		
4320 min Winter	1.651	0.0	2156		
5760 min Winter	1.300	0.0	2912		
7200 min Winter	1.079	0.0	3600		
8640 min Winter	0.927	0.0	4264		
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Summary of Results for 100 year Return Period (+40%)

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m ³)	Status
10080 min Winter	8.534	0.034	1.2	0.3	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m ³)	Time-Peak (mins)
10080 min Winter	0.815	0.0	4976

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Rainfall Details

Rainfall Model	FSR	Winter Storms	Yes
Return Period (years)	100	Cv (Summer)	0.750
Region	England and Wales	Cv (Winter)	0.840
M5-60 (mm)	18.000	Shortest Storm (mins)	15
Ratio R	0.450	Longest Storm (mins)	10080
Summer Storms	Yes	Climate Change %	+40

Time Area Diagram

Total Area (ha) 0.250							
Time (mins)	Area	Time (mins)	Area	Time (mins)	Area	Time (mins)	Area
From:	To:	From:	To:	From:	To:	From:	To:
	(ha)		(ha)		(ha)		(ha)
0	4 0.083	4	8 0.083	8	12 0.083		

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Model Details Storage is Online Cover Level (m) 10.000 Porous Car Park Structure <table><tr><td>Infiltration Coefficient Base (m/hr)</td><td>0.23660</td><td>Width (m)</td><td>16.0</td></tr><tr><td>Membrane Percolation (mm/hr)</td><td>1000</td><td>Length (m)</td><td>17.0</td></tr><tr><td>Max Percolation (l/s)</td><td>75.6</td><td>Slope (1:X)</td><td>100.0</td></tr><tr><td>Safety Factor</td><td>2.0</td><td>Depression Storage (mm)</td><td>5</td></tr><tr><td>Porosity</td><td>0.30</td><td>Evaporation (mm/day)</td><td>3</td></tr><tr><td>Invert Level (m)</td><td>8.500</td><td>Membrane Depth (m)</td><td>0</td></tr></table>			Infiltration Coefficient Base (m/hr)	0.23660	Width (m)	16.0	Membrane Percolation (mm/hr)	1000	Length (m)	17.0	Max Percolation (l/s)	75.6	Slope (1:X)	100.0	Safety Factor	2.0	Depression Storage (mm)	5	Porosity	0.30	Evaporation (mm/day)	3	Invert Level (m)	8.500	Membrane Depth (m)	0
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